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The Changing Definition and Role of Collections and Services in the University Research Library

By James L. Mullins

It is no surprise to any of us who work in libraries, whether school, public, special, college, or university, that the role we play in supporting the learning, discovery, and information needs of our clientele has changed. It was evolutionary, at first, by incorporating computer assisted access to resources, primarily through integrated library systems that provided enhanced and remote access to the holdings in our collections. Increased sharing and collaboration emerged as a result of enhanced access facilitated by information technology, thereby meeting more fully the needs of clientele throughout the state, region, nation, and increasingly the world. Although this change has been significant for all types of libraries, this article will focus on the significant changes and trends that influenced, and will influence in the future, collection development growth and services in university research libraries.

Foundation of University Research Libraries

The unique role that university research libraries have traditionally had that separates them from other types of libraries is the expectation that a university research library will be committed to growing and stewarding ever larger, comprehensive collections. The Association of Research Libraries (ARL) standards for ranking research libraries were based on the size and depth of collections and resources of its founding members in 1932. The original members of ARL were the largest and most recognized research libraries in the country, e.g., Harvard, Yale, Columbia, Stanford, Michigan, Illinois, California-Berkeley, and Wisconsin. Although the ARL founding institutions represented the largest

and deepest collections in the United States, even these libraries were feeling the effect of the Great Depression, and realized the need to cooperate, coordinate growth, and designate areas of responsibility for collection development.

A similar story occurred at the end of World War II when ten Midwestern research universities (including Indiana University and Purdue University) came together to form the Midwest Inter-Library Corporation (MILC). Initially, MILC was formed to provide a collaborative facility to store little used materials due to the overcrowded conditions most research libraries faced (prior to the building boom in the 1950s and 1960s). The membership of MILC expanded in the 1970s to include research universities around the country, and, reflecting this growth, changed its name to the Center for Research Libraries (CRL).

CRL presently has over 250 members. Since its founding, the mission of CRL has evolved to not only serve as a repository for materials little used by its members, but a cooperative collection development provider insuring that little used, but very expensive materials, would be purchased (such as microfilm of international dissertations or newspapers) that no single research library could afford to purchase or house. Presently there are four members of CRL from Indiana: Indiana University – Bloomington, Purdue University – West Lafayette, University of Notre Dame, and Valparaiso University.

During the last century, research university libraries also took on the responsibility for

the development of archives and special collections. Although research university libraries had been developing ever growing collections of monographs and journals, there was also an increasing need to collect rare and one of a kind material in danger of being lost either through neglect or through the ravages of war. After World War I, research university libraries in the United States became involved in creating research collections that drew from private collections in Europe and Asia. As the economic crisis deepened in the 1920s in Europe (high taxation on wealth to recover the costs of the war), American libraries were able to purchase entire libraries of rare books and manuscripts from the owners.

In addition, the collections of some of the late nineteenth century industrialists, upon their death, were given to research university libraries in the United States. Josiah K. Lilly, Jr., is a good example of an industrialist (Lilly Pharmaceuticals) who had a passion for collecting rare books and manuscripts; in the 1950s he donated his extensive collection to Indiana University. His collection served as the foundation for the creation of the Lilly Library in 1960. Purdue University, although not generally known for its rare books or special collections, was given in the 1920s a comprehensive collection of rare books that encompassed the history of science and the technology of transportation from the 16th to the 20th centuries. The collection included a rare edition of the Sir Isaac Newton's, *Philosophiae naturalis principia mathematica*.

The Present Climate within the University Research Library

The 21st century has seen the advent of major digitization efforts to make research collections available electronically through the Internet, anywhere in the world. One such initiative is the one facilitated by the collaborative effort of Google, Inc., the Committee for Institutional Cooperation (CIC - the Big 10 universities plus University of Chicago), the University of California, and other American research university libraries to digitize and provide full text access to English language public domain

materials published prior to 1923. A Google search provides access to an index of the text of copyrighted materials for more timely and efficient determination whether a book is needed and should be requested through interlibrary loan to support research. To ensure that these scanned copies of holdings in major research libraries remain in the public domain and are available, the HathiTrust was formed in 2007 by the CIC and the University of California to provide a permanent repository for the digital images of these materials. By early 2012, nearly 10 million items had been deposited into the HathiTrust, and of these, 2.8 million are in the public domain and openly accessible to member libraries. A major initiative is in place to digitize all federal government documents. Indiana University took a leadership role in the formation of the HathiTrust; Purdue University and the University of Notre Dame are also members.

Although the digitization of books is a fairly recent phenomenon, the digitization of journal literature has been proceeding for the past fifteen years. Collaborative, non-profit efforts, such as JSTOR, were an early endeavor to digitize runs of journals initially with the support and good will of most journal publishers, since the publishers saw little value in older issues of their journals (as demonstrated by little or no effort on the part of the publishers to maintain a comprehensive run of their print journals). They relied on libraries to maintain and retain the historical record of their publishing. University research libraries took this responsibility very seriously, since the only reliable manner by which their faculty could be assured access to an older article was to have it "in-house," that necessarily meant that major portions of university research libraries' collections duplicated each other.

The inauguration of JSTOR in the mid-1990s and its success demonstrated the value placed upon journal back files by researchers who wanted easy and ubiquitous access to digital journal files. By taking the initiative, JSTOR provided a cost effective mechanism to provide access within the non-profit sector. Today,

most university research libraries have already disposed of, or are seriously considering disposal of, their JSTOR print titles. The satisfaction that the research community has with digital access rather than print access was at first seriously underestimated by research librarians. An example is the removal of nearly all JSTOR titles in 2008 from the stacks of the Purdue Libraries to storage in a basement at the Veterinary Medicine School. After four years, only three volumes have been called from the repository for use. With this as an indicator, these volumes will soon be recycled to provide space for other lesser used materials. A collaborative project with Indiana University will provide at least one print copy for research purposes housed in IU's Auxiliary Library Facility (ALF) for the CIC members.

Along with the increased availability of digitized older monographs and journals came the introduction of e-books as an option. Although it has taken a few years for the academic community to respond enthusiastically to e-books, the advances that have taken place in access and format stability have caused many university research libraries to seriously consider e-books in addition to print, and others are close to preferring the e-version over print as the initial purchase. University research libraries are also opting, which in earlier decades would have been an anathema, to purchase on demand since the provision of digital access will ensure, for the most part, that the title will be available if needed in the future. Previously, once a print run was sold out, its availability was also gone. University research libraries are making the decision that the cost of having an item on the shelf "just in case" it is needed does not outweigh the cost of acquiring, cataloging, and housing it.

The Publishing Business Model, a Conundrum

Research university libraries find themselves between a rock and a hard place. Members of their faculty are expected to create research, evaluate and referee research proposed to be published, and consume published research. Often many faculty members provide additional

services (sometimes contributed, at other times paid) such as serving on an editorial board or as an editor of a professional, scholarly journal.

It is necessary to look back about twenty-five years to correctly assess how universities, faculty, and libraries created this situation. After World War II, with the proliferation of research and the need to disseminate research through professional society publications, the disciplinary societies turned to its members to contribute their time and knowledge to perform not only research and write articles detailing their research findings, but to serve as referees for and editors of the journals. This required that university administrators accepted that faculty would be given reduced teaching loads to accommodate the demands placed upon them to edit a scholarly journal and, usually, provide secretarial support to assist in the production of the journal. By doing this, research universities shared the burden for advancing research.

In the 1980s as universities became more and more conscious of expenditures and the limitations of their budgets, they looked at this as a cost that they should not have to bear even though it was contributing to the "common good." As universities eliminated their support, the professional societies realized they were faced with significant increases in the cost to produce their professional journals. The options they had were not good, since they included increasing membership dues for members, charging significantly more for the journal, or outsourcing the publication of the journal. The professional societies, for the most part, ultimately chose to contain the membership and subscription fees for their members while increasing the annual subscription cost to academic libraries. Or, if this was not appealing or if the organization was too small to maintain the operations necessary to publish the journal, the society contracted with a commercial publisher who would guarantee a steady revenue stream while keeping the cost of the journal to due paying members of the professional society relatively low and stable.

For the past fifteen years research university libraries have been challenged to fund annual 6-8% inflationary increases from the publishers. Although this is referred to as "inflation" by the publishers, it really reflects the monopoly held by the publishers. The university and its library have little recourse or options but must purchase the journals to support faculty research. Although all colleges and universities are faced with the challenge of meeting annual increases for the cost of library materials, those libraries that are more book-focused and not scientific-, medical- or technical-journal dependent do not face the same challenge. It is estimated that on average, 70 to 80% of the research university materials budget expenditure is in support of graduate and faculty research with much, much less committed solely to support undergraduate education. Purdue's experience is consistent with this breakdown.

The cost of library research materials is partially recovered through the research process itself. Research universities are highly dependent on overhead charges made on sponsored research. This overhead charge, called Facilities and Administration - F&A, is computed by the university to identify costs that are incurred for common or joint objectives and, therefore, cannot be identified readily and specifically with a particular sponsored project, an instructional activity, or any other institutional activity. F&A costs are synonymous with "indirect" costs and "overhead" costs. One of the components in the calculation of the F&A charge is the cost of supporting the library. Both professional staff and the cost of providing scholarly resources such as books and journals are included in the calculation of the F&A rate for each university.

In 2011, the F&A rate approved by the Federal Government for Purdue to charge on a grant was 53%, that is: a principal investigator (PI) may be awarded a grant from the National Science Foundation (NSF) for \$10 million of that amount \$5,300,000 is taken off the top to cover the "overhead" that supports the research through the provision of facilities,

computer infrastructure, administrative support, and library resources. So, in this example, the PI has \$4,700,000 to complete the actual work proposed as part of the grant agreement (partial salary recovery, graduate assistants, equipment, etc.).

Although it could be assumed that the research university library has it made in that the cost associated with acquiring journals and books is covered by the federal government, it isn't the case. Rarely, if ever, is there a direct link between the income from F&A and that allocated to libraries for support of the materials budget or staffing. Since the auditing agency limits the amount that can be recovered for administrative costs (the area in which library materials are included), generally the amount included in the calculation is far below the actual cost of scholarly research materials. Even if there were a direct correlation, it is doubtful that any academic research library would want its funding directly tied to the income generated by F&A and therefore be dependent on the annual fluctuations in the amount of sponsored research undertaken during any five year period. However, it does support the case when the university librarian makes the annual request for increased support to meet the inflationary cost of library resources, especially if the amount of sponsored research income is steadily increasing.

Data Management: A new challenge and opportunity

Ten years ago if university research librarians had been told that during the second decade of the 21st century they would be asked to participate in managing data sets as part of their work as a university research librarian, they would have been incredulous. Traditionally, librarians have been involved at the end of the research process, especially in the scientific and technical disciplines. The only active participation a librarian would have in a chemical or biological research project would have been providing access to online indexing or scholarly journal resources. Scientific and technical research was completed in a lab

using equipment that required highly skilled (and patient) attention. In the laboratory, there was no place for a librarian to be a collaborator.

In a very short time, from the 1990s on, research moved from the laboratory to computational model building dependent on data sets. Computational science, sometimes referred to as e-science, replaced the need to perform many laboratory experiments. Once data was generated, that data set could be used and re-used in model building and testing. However, in short order, scientists, engineers, and medical researchers were overwhelmed with the data generated. Data could be stored, but the retrieval, organization, and sharing of a data set was a challenge that seemed insurmountable to the researcher.

In 2010, to allow for "data mining," the National Science Foundation (NSF) followed the lead of the National Institutes of Health (NIH) in requiring that data generated with sponsored research from the NSF must be easily and generally made available to the research community (after an agreed upon embargo period to safeguard research undertaken as part of the sponsored project). The role of university research libraries in data management was not clear to everyone (least of all to the researchers). Their understanding of librarians was what they saw them do, that is, the management and organization of tangible objects - books and periodicals. However, as some researchers became aware of the tenets of library science and the benefit of applying the principles of organization, dissemination, and preservation, this created a new and important role for university research librarians to undertake, especially at Purdue.

Two obstacles presented themselves as librarians explored a role in data management: librarians want to share everything, and researchers generally don't want to share their data until they have determined and shared their findings; and, second, librarians didn't see themselves participating on the front end of the research process, there was no precedent for this role.

First, by integrating the principles of archival

science, we can respond to the researchers concern about "sharing" data before its time. Archival science allows for restrictions on access for a specific, limited time and/or to a limited group. By looking to archival science and its practices, we can create a synthesis of library and archival sciences that can provide an acceptable balance between access and privacy/confidentiality.

Second, to refute the statement that librarians would make that "we don't get involved in the front end of research," is to remind them that libraries have been involved in managing data, albeit in a tangible format, for nearly a century through the collection of manuscripts and other archival print materials that are "bits of data" until a researcher accesses them and uses them to answer a research problem. Thinking of a data set as a collection of "objects" that together, will answer a research question can help place managing data into its appropriate role within the university research library.

The Association of Research Libraries (ARL) established a task force four years ago to focus on e-science issues. The e-Science Working Group during the past year solicited funds to support an e-science institute. Over seventy research university libraries committed to supporting and participating in the ARL e-Science Institute. Beginning in the summer of 2011, the participants were instructed on the basic principles of data curation and management with the overall goal of developing a strategic plan for the implementation of e-science support within their institution. Purdue Libraries has been a leader in implementing e-science and data management processes on the national and international level and has been actively participating in the offerings of the e-Science Institute.

How are these new activities integrated into the role of the library? How does a librarian take on these additional duties in an already committed work week? Through careful vetting of demand for services and time committed to operations that have little return on time invested, university research libraries are

deciding to jettison activities that would have been unthinkable twenty years ago. Reference desk service has been significantly scaled back or eliminated entirely. Collection development activities have been reduced through greater reliance on approval plans and purchase upon request. Branch libraries are being eliminated and/or merged into larger interdisciplinary libraries or the main library in order to increase efficiency and provide support for interdisciplinary collaboration.

What does the future hold for university research libraries?

It is always risky to forecast the future; two years ago who would have predicted the impact of the iPad on communication, recreation, and reading. The likely development of a common platform for e-books is becoming more and more possible, and if not a common platform, then at least one that will communicate and be transferrable from one device to another. What will be the impact upon the university research library? What is happening now will most likely accelerate; the adoption of e-books as an acceptable and even desirable alternative to the print monograph will likely grow exponentially.

One area that university research libraries share with their brethren in other academic libraries is the re-use of facility space from housing collections to user collaborative and individual study space. As mentioned above, collections of books or journals lined up neatly in the stacks waiting to be circulated for possibly serendipitous use, is a luxury that most research libraries can ill afford today and less likely to afford in the future. The reallocation of space to study, learning, and instruction is becoming more and more critical on campus and will become more so as new learning pedagogies (team projects and collaboration) become common place. Large public research universities that have relied on lecture halls of 400 to 500 students will find it increasingly important to break out of this format into smaller teaching environments to increase retention and success of the students.

Purdue inaugurated in the fall of 2011 a new program titled *Instruction Matters: Purdue Academic Course Transformation* (IMPACT), which has taken courses that have traditionally been taught in a large lecture format and has broken them up into multiple sections of 160 students who then meet in a collaborative space to be coached by the professor. The challenge was to find spaces that would accommodate this teaching mode. The Purdue Libraries offered to give up a large study and shelving area in the Hicks Undergraduate Library to have it converted for the IMPACT classes. Plans are underway to create a second IMPACT classroom in the Hicks Library for 2012. Additionally, a university classroom capacity of 60 was created in the former unbound periodicals room in the Engineering Library.

The change in definition of what constitutes a university research library will continue to evolve during the next five to ten years. The portion of the materials expenditures committed to digital resources will continue to grow for most university research libraries (while coping with the continuing monopoly of the publishers). The commitment that university research libraries will need to make to open access will become increasingly important through the growth of institutional repositories. This will require institutional acceptance and commitment to open access and support of initiatives such as the *Berlin Declaration*.

A substantial role of libraries and librarians during the next five to ten years will be to define the responsibility to provide access to and stewardship of data sets. It will become an accepted role of the library as a collection development responsibility to develop taxonomies to describe data, collaborate with faculty on retention of data sets, and work to establish international protocols for the sharing of data sets.

Finally, the changes already experienced and the ones on the horizon will require librarians or professionals within the university research

library to accept these new challenges – not only accept but embrace these initiatives, similar to the effort it took to have librarians embrace information literacy as an expected role of a librarian. Library and Information Science (LIS) programs will need to collaborate and consult much more closely with the university research library community to re-think and revise the course offerings of their programs. ALA accreditation committees will need to be more aware of the changing environment within university research libraries and not tend to evaluate an LIS program on knowledge and practice that is out of date. Only a few of the LIS schools in the country are aware of the new expectations placed upon present and future librarians, however, these schools are not sufficient to prepare the librarians that will be needed as the *Baby Boomers* retire over the next five to ten years.

In the future, university research libraries will be less like each other than they were 20 years ago, and even more different than they are today. The identity of a university research library will be linked with signature disciplinary areas for which the university is known. Data management and collaboration in research will be of increased importance for science and engineering universities requiring an integration of the work of librarians and researchers at a level only beginning today. Those universities more embedded in the humanities will likely see an increased reliance on technology to enable new ways of undertaking research in literature, history, or philosophy. This will require a growth in collaboration among librarians, technologists, and other researchers.

The next five to ten years for university research libraries will be exciting ones. The transition that began nearly 40 years ago when the Ohio College Library Center first emerged and, through its leadership, eventually led to on-line catalogs and the elimination of the card catalog was the beginning. Everything we have done since and will continue to do in the future is only “fine tuning” compared to the seminal steps taken in the early 1970s.

Bio

James L. (Jim) Mullins has over 38 years of library experience. He has been at Purdue since 2004, prior to that he was with MIT Libraries as associate director for administration. Earlier, he held positions at Indiana University and Villanova University.

Dean Mullins received BA and MALS degrees from the University of Iowa and the PhD from Indiana University.

As a published authority, Dean Mullins has influenced and helped revise the practices and standards for college and university libraries nationally and internationally through ACRL, ALA, IATUL, and the International Federation of Library Associations (IFLA).